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## Africa's struggle with inadequate COVID-19 testing



The hallmark of effective disease control is early diagnosis, and the prognosis of Africa's recent outbreaks before coronavirus disease 2019 (COVID-19), especially Ebola and Lassa fever, largely hinged on it. Early diagnosis is even more important for COVID-19 pandemic, considering transmission risks potentially posed by asymptomatic individuals.

Like elsewhere, control efforts in Africa are limited by insufficient test kits, thus compelling African governments to restrict testing to individuals that met specifically narrowed criteria. In April, while the USA was approaching 4 million tests, Nigeria, Africa's most populous country, was just nearing 7000 tests. At the outset of the pandemic, only a few African countries had COVID-19 testing capacity, some had none. South Africa was supporting some neighbouring countries with testing. Since then, testing capacity has considerably improved across the continent, but access is still inequitable.

In Ghana, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) testing is available at the Noguchi Memorial Institute for Medical Research in Accra and at the Kumasi Center for Collaborative Research. The situation is similar in Uganda. In late April, Uganda had fewer than 60 confirmed cases but Gerald Mboowa, a bioinformatics and genomics researcher at Uganda's Makerere University attributed the low figures to the small number of tests conducted. "There may be 100 suspected cases but they will not test everyone...because there are very few test kits", Mboowa told *The Lancet Microbe*.

The US Food and Drug Administration authorised emergency use of Xpert Xpress SARS-CoV-2, which can be used with GeneXpert for the diagnosis of COVID-19. The machines for this method are ubiquitous in Uganda and across Africa, within the framework of active and drug-resistant tuberculosis

diagnosis. Mboowa recommended their repurposing for COVID-19 testing.

The Nigeria Centre for Disease Control (NCDC) has also been under pressure to expand testing capacity. By involving already existing viral haemorrhagic fevers laboratory network and other national laboratories that have molecular diagnostic equipment, Nigeria increased its combined national daily capacity to 2500 tests by mid-April, and plans to increase it to a minimum of 7000 tests, according to the National Strategy to Scale Up Access to Coronavirus Disease Testing in Nigeria. NCDC's Director General, Chikwe Ihekweazu, however, noted that Nigeria was not testing up to capacity because of challenges with transporting test samples from points of collection to the laboratory.

In South Africa, the private sector was providing COVID-19 testing before public laboratories, but elsewhere, private labs are sparingly involved. Ahmed Ogwel Ouma, Deputy Director at Africa CDC, admitted the private sector needs to become involved in testing, with some precautions. "Public-private partnership is particularly required in handling COVID-19 responses but all [must be] under close government supervision and control", Ouma told *The Lancet Microbe*.

SARS-CoV-2 testing requires class 2 biosafety cabinets and polymerase chain reaction machines, but Kenneth Okolie, Chief Operating Officer at medical diagnostics provider SYNLAB Nigeria, argued past actions of African governments eroded private sector's confidence in investing to acquire COVID-19 testing equipment. "Standards are not enforced thereby making the playing field quite unregulated. This in no small means impedes investment, growth and expansion", Okolie told *The Lancet Microbe*.

Although individuals can go online to ascertain their risks and know if they are qualified for testing, several offline solutions have emerged. In

Nigeria, health start-up LifeBank and its partners are establishing COVID-19 mobile testing centres to aid diagnosis. In Ghana, on-demand drone delivery service Zipline is deploying drones to transport samples from over 1000 health facilities in difficult-to-reach areas to designated COVID-19 testing facilities. "Using contactless drone delivery to transport COVID-19 test samples will allow the government to respond to the pandemic and help save lives more quickly", said Zipline CEO Keller Rinaudo.

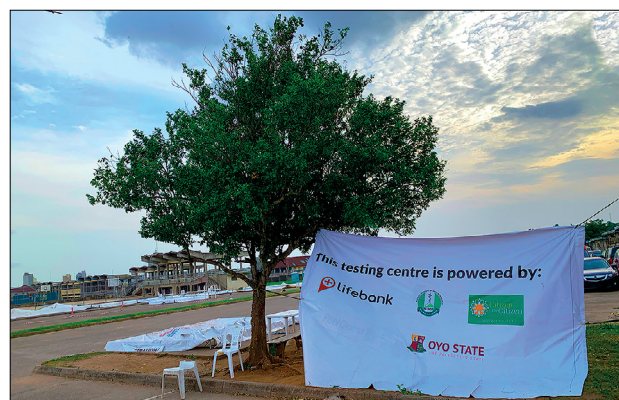
In many settings in Africa, pressure is already mounting to reopen cities on lockdown, and the emergence of effective, free or low-cost, point-of-care diagnostics could facilitate testing of large numbers of Africans, especially in labs lacking current testing requirements. This feat, however, is still months away, according to Christian Happi, director of Nigeria's African Centre of Excellence for Genomics of Infectious Diseases. "You really want those tools to be robust and you want the result of that analysis to be confident. It is a process and we are working towards that, hopefully we will get there," Happi told *The Lancet Microbe*.

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For the **National Strategy to Scale Up Access to Coronavirus Disease Testing in Nigeria** see <http://covid19.ncdc.gov.ng/resource/guideline/COVID19TestingStrategy.pdf>

For US Food and Drug Administration authorisation of Xpert Xpress SARS-CoV-2 see <https://www.fda.gov/media/136314/download>



A mobile COVID-19 testing centre being set up at a major soccer stadium in Ibadan southwest Nigeria, to screen more people that may qualify for testing